

## CLAIMS

1. A composition comprising a peptide copper complex and a phytochemical compound.
2. The composition of claim 1 wherein the phytochemical compound is a polyphenol.
3. The composition of claim 2 wherein the polyphenol is a flavanoid, flavonoid, flavonoid derivative, flavolignan, polyphenolic rhizome, or a mixture thereof.
4. The composition of claim 3 wherein the flavanoid is catechin, a catechin derivative, or a mixture thereof.
5. The composition of claim 4 wherein the catechin derivative is an epicatechin, a galocatechin, an epigallocatechin, an epicatechin gallate, or an epigallocatechin gallate.
6. The composition of claim 4 wherein the catechin, catechin derivative, or mixture thereof, is derived from green tea or comprised in a green tea extract.
7. The composition of claim 4 wherein the catechin, catechin derivative, or mixture thereof, derived from cocoa or comprised in a cocoa extract.
8. The composition of claim 3 wherein the flavanoid is anthocyanin or oligomeric proanthocyanidin.
9. The composition of claim 3 wherein the flavonoid is quercetin, kaempferol, myricetin, rutin, or baicalein.

10. The composition of claim 3 wherein the flavanoid derivative is quercetin chalcone or Ginkgo flavone glycoside.
11. The composition of claim 3 wherein the flavolignan is silybin, silydianin, or silychristin.
12. The composition of claim 3 wherein the polyphenolic rhizome is curcumin.
13. The composition of claim 1 wherein the phytochemical compound is a carotenoid.
14. The composition of claim 13 wherein the carotenoid is lycopene.
15. The composition of claim 13 wherein the carotenoid is astaxanthin.
16. The composition of claim 13 wherein the carotenoid is lutein, alpha-carotene, beta-carotene, canthaxanthin, or zeaxanthin.
17. The composition of claim 1 wherein the phytochemical compound is a mixture of a flavanoid and a carotenoid.
18. The composition of claim 1 wherein the peptide copper complex is alanyl-histidyl-lysine:copper(II).
19. The composition of claim 1 wherein the peptide copper complex is valyl-histidyl-lysine:copper(II).

20. The composition of claim 1 wherein the peptide copper complex is glycyl-histidyl-lysine:copper(II).

21. The composition of claim 1 wherein the peptide copper complex is L-alanyl-L-histidyl-L-lysine:copper(II), L-valyl-L-histidyl-L-lysine:copper(II) or glycyl-L-histidyl-L-lysine:copper(II).

22. The composition of claim 1 wherein the peptide copper complex is [glycyl-histidyl-lysine-R]:copper(II), wherein R is an alkyl moiety containing from one to eighteen carbon atoms, an aryl moiety containing from six to twelve carbon atoms, an alkoxy moiety containing from one to twelve carbon atoms, or an aryloxy moiety containing from six to twelve carbon atoms

23. The composition of claim 1 wherein the molar ratio of peptide to copper in the peptide copper complex ranges from about 1:1 to about 3:1.

24. The composition of claim 1 wherein the molar ratio of peptide to copper in the peptide copper complex ranges from about 1:1 to about 2:1.

25. The composition of claim 1 wherein the peptide copper complex is present at a concentration ranging from about 0.01% to about 10% by weight of the composition.

26. The composition of claim 1 wherein the peptide copper complex is present at a concentration ranging from about 0.025% to about 1% by weight of the composition.

27. The composition of claim 1 wherein the peptide copper complex is present at a concentration ranging from about 0.05% to about 0.5% by weight of the composition.

28. The composition of claim 1 wherein the phytochemical compound is present at a concentration ranging from about 0.001% to about 10% by weight of the composition.

29. The composition of claim 1 wherein the phytochemical compound and the peptide copper complex is encapsulated in a liposome or microsphere adapted to aid in the delivery of the peptide copper complex, or to enhance the stability of the composition.

30. The composition of claim 1 wherein the phytochemical compound and the peptide copper complex are formulated in an instrument adapted to deliver the compounds via iontophoresis.

31. The composition of claim 1, further comprising an inert and physiologically-acceptable carrier, thereby, suitable for oral or parenteral administration.

32. The composition of claim 31 wherein the inert and physiologically-acceptable carrier is sterile water, physiological saline, bacteriostatic saline, or phosphate-buffered saline.

33. The composition of claim 1, further comprising an inert and physiologically-acceptable diluent, thereby, suitable for topical administration to the skin.

34. The composition of claim 33 wherein the inert and physiologically-acceptable diluent is saline, sterile water, a petrolatum based cream, a pharmaceutically acceptable gel, a short chain alcohol, or a short chain glycol.

35. The composition of claim 34, further comprising a sunscreen agent.

36. The composition of claim 34, further comprising a skin conditioning agent.

37. The composition of claim 34, further comprising a skin protectant.

38. The composition of claim 34, further comprising an emollient.

39. The composition of claim 34, further comprising a humectant.

40. The composition of claim 34, further comprising a fatty alcohol, a fatty acid, an organic base, an inorganic base, a preserving agent, a wax ester, a steroid alcohol, a triglyceride ester, a phospholipid, a polyhydric alcohol ester, a fatty alcohol ether, a hydrophilic lanolin derivative, a hydrophilic beeswax derivative, a cocoa butter wax, a silicon oil, a pH balancer, a cellulose derivative, a hydrocarbon oil, or a mixture thereof.

41. The composition of claim 34, further comprising an emulsifying agent, a surfactant, a thickening agent, an excipient, or a mixture thereof.

42. The composition of claim 34 wherein the composition is in the form of a liquid, cream, gel, fluid cream, lotion, or oil.

43. A method for enhancing or restoring the resistance of a mammal to oxidative or inflammatory damage caused by the release of reactive oxygen species, comprising orally, parenterally, or topically administering to the mammal a therapeutically effective amount of the composition of claim 1.

44. A method for accelerating the healing of wounds in a mammal, comprising orally, parenterally, or topically administering to the mammal a therapeutically effective amount of the composition of claim 1.

45. A method for cosmetically treating mammalian skin, comprising contacting the skin in need thereof with an effective amount of the composition of claim 42.

46. The method of claim 45 wherein the cosmetic treatment of the mammalian skin is smoothening the skin, reducing hyperpigmentation of the skin, reducing wrinkles and fine lines in the skin, reducing evidence of photodamage of the skin, or reducing the signs of aging in the skin.

47. A method for stimulating hair growth, preventing hair loss, or treating hair loss, comprising orally, parenterally, or topically administering to a mammal an effective amount of the composition of claim 1.